

Oak Ridge, Tennessee, Warehouses Site



U.S. DEPARTMENT OF
ENERGY

Legacy
Management



SITE CERTIFICATION SUMMARY

This Site Certification Summary sheet provides information about the **Oak Ridge, Tennessee, Warehouses Site**. The U.S. Department of Energy Office of Legacy Management is responsible for long-term stewardship of the site under the **Formerly Utilized Sites Remedial Action Program**.

Site Description and History

The 20-acre Oak Ridge Warehouses site (formerly the Elza Gate site) is located on Antwerp Lane in the eastern portion of Oak Ridge, Tennessee, in what is now known as Melton Lake Industrial Park. In the early 1940s, the Manhattan Engineer District (MED) developed the site as a storage area for pitchblende, a high-grade uranium ore from Africa. From 1946 to the early 1970s, the U.S. Atomic Energy Commission (AEC) operated the site as an equipment-storage area for Oak Ridge National Laboratory (ORNL). AEC sold the site to Jet Air, Inc., which operated a fabricating and metal-plating facility on the site. MECO, a real-estate development company, currently owns the site and has developed it into an industrial park. The site is divided into nine parcels, and MED warehouses were located in Parcels 1 through 4 (see figure below). None of the original structures remain. There is one building on the site, erected on an existing and expanded concrete pad on Parcel 1A.

Site Remediation Timeline

1987 — Oak Ridge Associated Universities surveyed the site for uranium, metals, and polychlorinated biphenyls (PCBs).

1988 — ORNL conducted radiological surveys indicating that contamination exceeding the criteria for site eligibility in the Formerly Utilized Sites Remedial Action Program (FUSRAP) was present.

November 30, 1988 — The Oak Ridge Warehouses site was designated a FUSRAP site.

1989 and 1990 — Bechtel National Inc. conducted a comprehensive radiological and chemical characterization of the site.

March-May 1991 — Phase 1 remedial action and verification surveys were conducted for Parcel 1A.

October 1991-January 1992 — Phase 2 remedial action and verification surveys were conducted for Parcels 1B through 9.

November 5, 1993 — The U.S. Department of Energy (DOE) published a notice of certification in the Federal Register.

Certification Docket Contents

The [Certification Docket](#) documents the successful decontamination of chemically and radiologically contaminated locations remediated at the Oak Ridge Warehouses site. The docket includes documents supporting DOE certification that conditions at the subject property comply with chemical and radiological guidelines and standards determined to be applicable to the property. Furthermore, the certification docket provides documents certifying that the use of the property will not result in any measurable chemical or radiological hazard to the general public as a result of the activities of DOE or its predecessor agencies.

*Plan view of the Oak Ridge site.
(Click image to enlarge.)*

Remedial Action

From 1991 to 1992, DOE remediated the Oak Ridge Warehouses site as part of FUSRAP. See the [Fact Sheet](#) for details.

FUSRAP objectives for the site were to:

- Identify and assess all sites that were formerly utilized in support of early MED/AEC nuclear work to determine whether further decontamination and/or control is needed.
- Decontaminate or apply controls to the site to permit compliance with current applicable guidelines.
- Dispose of or stabilize all generated residues in an environmentally acceptable manner.
- Accomplish all work in accordance with appropriate landowner agreements and local and state environmental and land use requirements to the extent permitted by federal law and applicable DOE orders, regulations, standards, policies, and procedures.
- Certify, at the completion of the remedial action, that the chemical and radiological conditions of the sites comply with guidelines and that the site may be released for appropriate future use.

Post-Remediation Sampling

To confirm that no radioactivity exceeding DOE guidelines remained in the remediated areas, the contractor conducted radiological surveys during remediation. These surveys included direct surface measurements on the concrete pads of former buildings and analysis of soil samples collected from excavated areas. Exposure rates were determined using a pressurized ionization chamber (PIC).

Exterior Areas

As excavation proceeded in exterior areas, walkover surface scans were conducted to determine whether all soil that was radioactively contaminated in excess of DOE remedial action guidelines had been removed from the remediated areas. The walkover survey provided immediate feedback so that additional excavation could be performed if residual contamination appeared to exceed remedial action guidelines. The area was then scanned again to verify that the contamination had been removed. The post-remedial action soil-sampling techniques validated the accuracy and completeness of the field measurements. Analytical results for soil samples collected after remediation indicate that no radioactivity in excess of DOE remedial action guidelines remains in the excavated areas.

Areas with PCB and lead contamination were excavated to a depth of 0.3 meters. Soil samples were collected and analyzed after remedial action was complete to confirm that no residual PCB or lead contamination remained above the established cleanup levels. All PCB and lead concentrations were below chemical guidelines (25 parts per million [ppm] and 1,000 ppm, respectively).

Gamma radiation exposure rates were measured using PIC at 1 meter above the ground surface. All exposure rates confirm that the external radiation contribution to the total dose from all pathways is well below the DOE radiation protection standard of 100 millirem per year (mrem/yr) (or 11.4 microrentgen per hour [μ R/h]) above background.

Interior Areas

Removal of the original concrete pad and soil beneath Pad 1 (Parcel 1A) was the only remedial action conducted inside the building at the site. After removal of the concrete pad, the concrete pieces were surveyed to determine whether DOE residual surface contamination guidelines had been met. Direct contact beta-gamma and alpha measurements were taken on the concrete pieces, and contaminated pieces were disposed of at the DOE Oak Ridge Reservation.

Post-remedial action soil samples were collected beneath Pad 1 in the same manner as the exterior areas. Analytical results for these samples indicated no residual radioactivity exceeding remedial action guidelines.

PIC measurements were taken in remediated areas within the building to ensure that the exposure rates were below the DOE protection standard of 100 mrem/yr (or 11.4 μ R/h) above background.



Oak Ridge Warehouses site after Phase 2 remediation, December 1992 (DOE Digital Archive).

For more detailed results of the post-remediation sampling, see the [Site Certification Data Summary Worksheet](#) on pages 4-6. For a more detailed map of the site and sampling locations, see the [Site Overview Map](#) on page 7.

Because the remedial activities at the Oak Ridge site took place before October 1997, residual contamination guidelines from DOE Order 5400.5, *Radiation Protection of the Public and the Environment*, were met. Sites remediated after October 1997 must meet the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 U.S.C. 9601 et seq.), as amended, and the National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR Part 300).

Current Site Conditions

Survey results at the completion of Phases 1 and 2 remedial action indicate that the levels of radioactivity in areas identified at the Oak Ridge Warehouses site during characterization activities were successfully brought into compliance with applicable DOE cleanup guidelines for radioactive contamination. The site also complies with U.S. Environmental Protection Agency guidelines for chemical contamination. DOE has been responsible for long-term stewardship of the Oak Ridge site since 1994. The stewardship requirements and protocols are captured in the FUSRAP Long-Term Surveillance and Maintenance Plan, which is available on the DOE Office of Legacy Management website (www.energy.gov/lm/oak-ridge-tennessee-warehouses-site).



ADDITIONAL INFORMATION

Documents related to FUSRAP activities at the Oak Ridge, Tennessee, Warehouses Site are available on the LM website at lmpublicsearch.lm.doe.gov/SitePages/default.aspx?sitename=Oak_Ridge.

For other information on site history or current long-term stewardship activities, please contact us at:

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Oak Ridge, Tennessee, Warehouses Site Certification Data Summary Worksheet

Six tables referenced in the Oak Ridge Certification Docket provide the evidence used to certify the site as clean.

When the tables refer to the "Certification Docket," that is the "Certification Docket for the Remedial Action Performed at the Elza Gate Site in Oak Ridge, Tennessee, 1991-1992" (published February 1994).

When the tables refer to the "Post-Remedial Action Report" or "PRAR," that is the "Post-Remedial Action Report for the Elza Gate Site, Oak Ridge, Tennessee" (published October 1992).

Post-Remedial Action Radionuclide Concentrations in Exterior Areas at Parcel 1A					
Table 4-1 in Post-Remedial Action Report (page 29)					
Sampling Location ^a	Depth (ft) ^b	Concentration (pCi/g)			
		Uranium-238	Radium-226	Thorium-232	Thorium-230
Area 1	0 - 0.5	<3.7	<0.6	<1.0	1.1 ± 0.6
Area 2	0 - 0.5	<2.9	<0.6	<1.0	0.8 ± 0.5
Area 3	0 - 0.5	<2.5	<0.5	<0.8	0.4 ± 0.5
Area 4	0 - 0.5	<2.6	<0.6	<0.8	0.9 ± 0.5
Area 5	0 - 0.5	<1.3	<0.4	<0.5	0.5 ± 0.5
Guidelines ^c		35	5	5	5

^aSampling locations are shown in Figure 3-1 (on page 15 of the PRAR).
^bSamples were collected 0-0.5 ft from the bottom of the excavation.
^cGuidelines were added to this table from the text on page 9 of the PRAR.

Post-Remedial Action PCB Concentrations ^a						
Table 4-3 in the Post-Remedial Action Report (page 34)						
	Location ^b					
	38	29	33	35	13	30
	0.5	0.7	0.7	0.5	4.3	5.4
	1.5	3.4	0.8	2.6	2.3	5.1
	0.8	0.1	0.2	4.8	19.0	0.6
	7.9	1.5	7.0	0.7	19.5	3.9
	0.4	12.6	4.5	0.8	0.6	4.9
	0.8	2.3	3.2	1.5	14.0	9.6
	1.5	21.1	10.2	4.2	0.8	17.4
	1.9	1.1	0.7	0.3	5.3	4.7
	0.6	1.7	4.9	0.2	3.8	
		11.5				
		0.6				
Average	1.8	5.1	3.6	1.7	7.7	6.4
Minimum	0.4	0.1	0.2	0.2	0.6	0.6
Maximum ^c	7.9	21.1	10.2	4.8	19.5	17.4

^aConcentrations are in ppm.
^bSampling locations are shown in Figure 3-4 (on page 20 of the PRAR).
^cThe Environmental Protection Agency cleanup guideline for PCBs at the site was 25 ppm (as stated on page 12 of the PRAR).

Post-Remedial Action Radionuclide Concentrations Beneath Pad 1 at Parcel 1A				
Table 4-5 in PRAR (page 38)				
Sampling Location ^a	Concentration (pCi/g ± 2 sigma)			
	Uranium-238	Radium-226	Thorium-232	Thorium-230
A	< 6.7	1.1 ± 0.2	1.3 ± 0.4	1.1 ± 0.6
B	< 7.3	1.5 ± 0.2	1.5 ± 0.4	< 0.4
C	6.0 ± 5.2	0.6 ± 0.1	0.6 ± 0.2	0.9 ± 0.6
D	3.2 ± 3.8	1.1 ± 0.1	1.6 ± 0.1	1.0 ± 0.6
E	< 5.1	0.8 ± 0.1	1.0 ± 0.1	< 0.4
F	< 7.7	1.2 ± 0.2	1.4 ± 0.6	1.0 ± 0.6
G	< 7.2	0.7 ± 0.1	1.3 ± 0.3	0.5 ± 0.5
H	< 6.5	0.9 ± 0.3	1.5 ± 0.2	0.7 ± 0.5
I	< 8.8	0.9 ± 0.1	< 0.8	0.9 ± 0.6
J	< 6.3	< 0.6	< 0.5	1.2 ± 0.6
K	< 7.4	1.3 ± 0.1	1.6 ± 0.2	0.7 ± 0.5
L	< 4.8	0.6 ± 0.3	0.8 ± 0.3	< 0.4
M	< 1.8	1.0 ± 0.1	1.3 ± 0.6	0.5 ± 0.5
N	1.4 ± 0.4	0.7 ± 0.1	1.2 ± 0.5	< 0.4
O	2.1 ± 1.6	1.4 ± 0.1	1.6 ± 0.6	0.7 ± 0.5
P	3.4 ± 2.1	1.3 ± 0.1	1.3 ± 0.1	< 0.4
Guidelines ^b	35	5	5	5

^aSampling locations are shown in Figure 3-2 (page 17 of the PRAR).
^bGuidelines were added to this table from the text on page 9 of the PRAR.

Oak Ridge, Tennessee, Warehouses Site Certification Data Summary Worksheet

Post-Remedial Action Radionuclide Concentrations in Excavated Areas at Parcels 1 through 9

Table 4-2 in Post-Remedial Action Report (page 30)*

Coordinate (ft)		Depth (ft)	Sampling Location ^a	Concentration (pCi/g ± 2 sigma)			
East	North			Uranium-238	Radium-226	Thorium-232	Thorium-230
80997	38891	3.0 - 4.0	Area 1	<11.7	0.9 ± 0.1	1.6 ± 0.2	3.1 ± 0.9
81167	38816	2.0 - 3.0	Area 2	<2.7	<1.1	<1.2	2 ± 0.7
81265	38816	6.0 - 7.0	Area 3	<13.6	1 ± 0.1	1.3 ± 0.2	1.9 ± 0.7
81233	38816	4.0 - 5.0	Area 3	<2.6	<1.1	<1.4	1.7 ± 0.7
81200	38816	1.0 - 2.0	Area 3	<11.9	1.4 ± 0.1	1.9 ± 0.2	3.3 ± 1
81233	38750	2.0 - 3.0	Area 3	<2.3	<1	<1.2	1.4 ± 0.6
81233	38783	3.0 - 4.0	Area 4	<11.9	1.7 ± 0.1	1.7 ± 0.2	3.1 ± 0.9
81298	38783	1.0 - 2.0	Area 5	<10.9	1.3 ± 0.1	1.8 ± 0.2	1.7 ± 0.7
81298	38816	10.0 - 11.0	Area 6	<2.4	<0.9	<1.2	2.1 ± 0.7
81298	38848	3.0 - 4.0	Area 7	<2.9	<1	<1.1	2.1 ± 0.8
81331	38848	6.0 - 7.0	Area 8	<10	1 ± 0.1	1.4 ± 0.2	2.4 ± 0.8
81331	38881	2.0 - 3.0	Area 9	<1.9	<1.2	<1.6	3.1 ± 0.9
81298	38881	4.0 - 5.0	Area 10	<2.5	<0.8	<1	3.9 ± 1
81298	38914	0.0 - 0.5	Area 11	<10.2	0.8 ± 0.1	1.4 ± 0.2	3.5 ± 1
81265	38881	2.0 - 3.0	Area 12	<10.7	1.1 ± 0.1	1.3 ± 0.1	1.9 ± 0.7
81233	38848	2.0 - 3.0	Area 13	<2.8	<1.1	<1.5	2.6 ± 0.8
81265	38848	3.0 - 4.0	Area 13	<2.3	<1.1	<1.4	3.5 ± 1
81232	38913	1.0 - 2.0	Area 14	4.2 ± 3.7	1.1 ± 0.7	1 ± 0.4	1.6 ± 0.6
81232	38881	1.0 - 2.0	Area 14	<11.4	1 ± 0.3	1.4 ± 0.4	1.5 ± 0.5
81199	38881	1.0 - 2.0	Area 15	<5.1	1.1 ± 0.1	<1.1	1.5 ± 0.6
81199	38913	1.0 - 2.0	Area 15	<10.6	0.8 ± 0.1	1.4 ± 0.4	1.4 ± 0.6
81265	38914	1.0 - 2.0	Area 16	<1.6	<1	<1.2	3.2 ± 0.9
81265	38947	1.0 - 2.0	Area 16	<2.4	<0.8	<0.9	3 ± 0.9
81265	38979	3.0 - 4.0	Area 16	<2.4	<0.8	<1	1.7 ± 0.7
81298	39012	3.0 - 4.0	Area 17	<3.3	<1	<1.3	2.6 ± 0.8
81364	38848	0.0 - 0.5	Area 18	<2.7	<1.1	<1.3	2.5 ± 0.8
81364	38881	1.0 - 2.0	Area 18	<3	<1	<1.2	2.4 ± 0.8
81397	38848	1.0 - 2.0	Area 19	<2.5	<1	<1.4	2.5 ± 0.8
81429	38848	1.0 - 2.0	Area 19	<2.6	<1	<1.4	1.9 ± 0.7
81462	38848	1.0 - 2.0	Area 19	<2.5	<1.1	<1.5	3.1 ± 0.9
81462	38881	2.0 - 3.0	Area 19	<5.2	<0.9	<1.2	3 ± 0.9
81429	38881	1.0 - 2.0	Area 19	<5.3	<0.9	<1.3	2.2 ± 0.8
81495	38914	3.0 - 4.0	Area 20	<9.7	1 ± 0.1	1.6 ± 0.2	1.4 ± 0.6
81495	38881	2.0 - 3.0	Area 20	<5.2	<0.8	<1.2	1.3 ± 0.6
81397	38914	0.0 - 0.5	Area 21	<3.2	<1	<1.2	2.4 ± 0.8
81397	39012	3.0 - 4.0	Area 23	<2.9	<0.9	<1.2	2.9 ± 0.9
81462	39012	3.0 - 4.0	Area 23	<2.6	1.1 ± 0.6	1.6 ± 1	2.9 ± 0.9
81429	39012	3.0 - 4.0	Area 23	<11.4	1.1 ± 0.1	1.5 ± 0.2	1.9 ± 0.7
81495	38979	3.0 - 4.0	Area 24	4.3 ± 2.2	<0.9	<1.1	2.7 ± 0.8
81511	39045	2.0 - 3.0	Area 24	<10.7	0.9 ± 0.1	1.6 ± 0.2	3.5 ± 1
81495	39012	3.0 - 4.0	Area 24	<3	1.1 ± 0.1	<1.1	1.2 ± 0.5
81397	38881	1.0 - 2.0	Area 25	<9.6	0.7 ± 0.1	1.6 ± 0.2	2.9 ± 0.9
81331	39012	3.0 - 4.0	Area 29	<3.2	<1.2	<1.3	2.6 ± 0.8
82200	38638	1.0 - 2.0	Area 38	<1.6	<1	<1.4	1.9 ± 0.7
82272	38757	1.0 - 2.0	Area 40	<10.1 ± 0.9	0.1 ± 1.2	0.2	3.1 ± 0.9
82304	38805	0.0 - 0.0	Area 41	<13.7	1.2 ± 0.3	4.5 ± 0.3	2.4 ± 0.8
82303	38809	0.0 - 0.5	Area 41	6.7 ± 2.9	<1	<1.4	2.5 ± 0.8
82304	38805	1.0 - 2.0	Area 41	<6.7	<1	<1.5	1.9 ± 0.7
81938	38799	2.0 - 3.0	Area 42	<4.4	<0.8	<1.1	1.6 ± 0.6
81938	38766	3.0 - 4.0	Area 43	<4.6	1 ± 0.4	<1.2	2.6 ± 0.8
81987	38734	1.0 - 2.0	Area 44	<4.3	1.4 ± 0.3	<0.8	4.9 ± 1.2
81970	38766	3.0 - 4.0	Area 45	<4.5	<0.7	<1.1	2.7 ± 0.8
82003	38799	4.0 - 5.0	Area 46	<4.9	<0.9	<1.2	1.1 ± 0.5
81970	38799	4.0 - 5.0	Area 46	<4.8	<0.9	<1.2	3.9 ± 1
82036	38799	5.0 - 6.0	Area 47	<4.8	<0.9	<1.3	1.7 ± 0.7
82036	38766	3.0 - 4.0	Area 47	<4.3	1.4 ± 0.9	<0.9	2.7 ± 0.8
82003	38766	3.0 - 4.0	Area 47	<4.6	1 ± 0.4	<1.2	4 ± 1
82020	38753	1.0 - 2.0	Area 48	<3.9	0.9 ± 0.5	<0.8	0.5 ± 0.3
81675	38898	2.0 - 3.0	Area 50	<2.5	<0.8	<0.9	4 ± 1
81751	38957	0.0 - 0.5	Area 51	<5	<0.9	<1.3	2.7 ± 0.9
81751	38937	0.0 - 0.5	Area 51	<5.8	<0.9	<1.5	3.1 ± 0.9
81800	38966	0.0 - 0.5	Area 52	<4.2	<0.7	1.7 ± 1.5	2.8 ± 0.9
81800	38996	0.0 - 0.5	Area 52	<3.6	<0.6	<0.9	5.1 ± 1.2
81800	38937	0.0 - 0.5	Area 53	<4.7	<0.8	<1.1	2.4 ± 0.8
81780	38917	0.0 - 0.5	Area 54	<6.2	1.4 ± 0.5	<1.3	2.9 ± 0.9
81790	38907	0.0 - 0.5	Area 54	<4.2	0.9 ± 0.7	<1.1	2.9 ± 0.9
81800	38907	0.0 - 0.5	Area 54	<3.6	<0.6	1.3 ± 0.1	3.2 ± 1
81829	38966	0.0 - 0.5	Area 55	<4.2	<0.8	<0.9	3.2 ± 0.9
81859	38878	0.0 - 0.5	Area 56	<3.9	<0.7	<1.1	2.4 ± 0.8
81829	38878	0.0 - 0.5	Pad 5	<4.6	<0.8	<1.2	2.4 ± 0.8
81549	38738	1.0 - 0.2	Area 58	16.1 ± 1.4	<0.9	<0.8	1.2 ± 0.5
81102	38825	2.0 - 3.0	Area 59	14.5 ± 4.3	0.6 ± 0.1	1.1 ± 0.2	1.5 ± 0.6

Coordinate (ft)		Depth (ft)	Sampling Location ^a	Concentration (pCi/g ± 2 sigma)			
East	North			Uranium-238	Radium-226	Thorium-232	Thorium-230
81167	38881	1.0 - 2.0	Area 60	<11.9	1.2 ± 0.2	1.4 ± 0.5	1.2 ± 0.6
81265	38750	2.0 - 3.0	Area 62	<2.3	<1	<1.2	2.2 ± 0.8
81265	38783	7.0 - 8.0	Area 62	<2.5	<1	<1.2	1.7 ± 0.7
81315	38779	1.0 - 2.0	Area 62	<9.2	0.8 ± 0.1	1.5 ± 0.2	2.8 ± 0.9
81338	38789	3.0 - 4.0	Area 63	5.7 ± 4.2	<0.8	<1.2	5.1 ± 1.2
81356	38709	1.0 - 2.0	Area 64	<1.3	<0.9	<1.2	2.4 ± 0.8
81567	38691	1.0 - 2.0	Area 65	<6	1.1 ± 0.1	<1.3	4.9 ± 1.2
81584	38691	3.0 - 4.0	Area 66	8.8 ± 4.2	<0.9	<1.4	1.9 ± 0.7
81751	38675	0.0 - 0.5	Area 67	<5.9	<1.2	<1.4	1.2 ± 0.5
81790	38704	0.0 - 0.5	Area 68	<7.6	<1.3	<1.8	1.2 ± 0.5
81869	38619	0.0 - 0.5	Area 69	<6.3	<1.1	<1.6	1.2 ± 0.5
81897	38673	0.0 - 0.5	Area 70	<9.4	<1	<1.5	2.1 ± 0.7
81862	38702	0.0 - 0.5	Area 71	<6.3	<0.9	<1.3	2.3 ± 0.8
81849	38740	0.0 - 0.5	Area 72	<5.1	<0.9	<1.3	2.1 ± 0.7
81882	38747	0.0 - 0.5	Area 73	8.7 ± 5.4	<0.8	<1.1	1.1 ± 0.5
81905	38799	3.0 - 4.0	Area 74	<4.9	<0.8	<1.1	3.7 ± 1
81741	38963	1.0 - 2.0	Area 76	<2.4	<0.8	1.3 ± 1	2.2 ± 0.8
81741	38930	1.0 - 2.0	Area 76	<10.2	1 ± 0.1	1.5 ± 0.1	1.9 ± 0.7
81495	38947	3.0 - 4.0	Area 77	<9.8	1.1 ± 0.1	1.8 ± 0.2	3.7 ± 1
81577	38930	3.0 - 4.0	Decon pad	<2.5	<0.8	<0.9	2.5 ± 0.8
81528	38979	1.0 - 2.0	Decon pad	<1.8	2.2 ± 0.4	<0.8	4.8 ± 1.2
81577	38963	2.0 - 3.0	Decon pad	7.6 ± 0.6	0.9 ± 0.1	1.4 ± 0.1	1.3 ± 0.6
81577	38914	1.0 - 2.0	Decon pad	<8.6	0.7 ± 0.1	1 ± 0.2	1.3 ± 0.6
81528	38914	2.0 - 3.0	Decon pad	<9	0.9 ± 0.2	1.7 ± 0.2	3.4 ± 1
81528	38979	1.0 - 2.0	Decon pad	<1.8	2.2 ± 0.4	<0.8	4.8 ± 1.2
81528	38947	1.0 - 2.0	Decon pad	<8.1	0.8 ± 0.1	1 ± 0.2	1.9 ± 0.7
81859	38937	0.0 - 0.5	Pad 2	<4.5	<0.7	<1	3.2 ± 1
81859	38966	0.0 - 0.5	Pad 2	<4	1 ± 0.7	<1	2.5 ± 0.8
81859	38996	0.0 - 0.5	Pad 2	<4.2	<0.7	<0.9	1.6 ± 0.6
81888	38966	0.0 - 0.5	Pad 2	<4.3	1 ± 0.6	1.7 ± 1	2.4 ± 0.8
81898	38976	0.0 - 0.5	Pad 2	<2.6	<0.9	<1.2	2.5 ± 0.8
81918	38937	0.0 - 0.5	Pad 2	<7.4	<1.3	<1.6	0.4 ± 0.3
81888	38907	0.0 - 0.5	Pad 2	<5.5	<0.9	<1.4	1.1 ± 0.5
81888	38937	0.0 - 0.5	Pad 2	<4	<0.7	1.4 ± 0.3	3 ± 0.9
81859	38907	0.0 - 0.5	Pad 2	<3.7	<0.8	1.3 ± 0.3	2 ± 0.7
81829	38907	0.0 - 0.5	Pad 2	<3.9	<0.6	1.3 ± 0.1	4.3 ± 1.1
81829	38937	0.0 - 0.5	Pad 2	<4.4	<7.2	1.7 ± 0.7	2.7 ± 0.9
81675	38963	0.0 - 0.5	Pad 3	<11.4	1 ± 0.1	1.6 ± 0.2	3 ± 0.9
81643	38996	1.0 - 2.0	Pad 3	<2.6	<0.9	<1	2.3 ± 0.8
81675	38930	0.0 - 0.5	Pad 3	<11	1.2 ± 0.2	1.2 ± 0.2	3.1 ± 0.9
81708	38996	3.0 - 4.0	Pad 3	<2.9	<1	<1.1	2.7 ± 0.8
81708	38930	4.0 - 5.0	Pad 3	7.6 ± 3.3	1 ± 0.1	1.3 ± 0.2	2.9 ± 0.9
81675	38996	3.0 - 4.0	Pad 3	<9.6	0.9 ± 0.1	1.4 ± 0.1	2.5 ± 0.8
81708	38898	1.0 - 2.0	Pad 3	<11.3	1 ± 0.2	1.5 ± 0.2	3 ± 0.9
81610	38996	2.0 - 3.0	Pad 3	<2.5	<0.9	1.1 ± 0.9	2.9 ± 0.9
81610	38898	3.0 - 4.0	Pad 3	<2.7	<0.9	<1.1	2.3 ± 0.8
81610	38930	0.0 - 0.5	Pad 3	5.3 ± 4	0.9 ± 0.1	1.3 ± 0.2	2 ± 0.7
81610	38963	3.0 - 4.0	Pad 3	<10.2	0.9 ± 0.1	1.5 ± 0.1	2.3 ± 0.8
81643	38930	0.0 - 0.5	Pad 3	16.1 ± 4.6	1.7 ± 0.1	1.3 ± 0.2	2.3 ± 0.8
81643	38963	0.0 - 0.5	Pad 3	<2.3	1.5 ± 0.5	<1.3	1.7 ± 0.7
81610	38996	2.0 - 3.0	Pad 3	<2.5	<0.9	1.1 ± 0.9	2.9 ± 0.9
81643	38898	2.0 - 3.0	Pad 3	<11.9	1.2 ± 0.1	2.1 ± 0.3	2.2 ± 0.8
81364	38914	0.0 - 0.5	Pad 4	<3.3	<1.2	<1.2	3.1 ± 0.9
81331	38979	2.0 - 3.0	Pad 4	<2.8	<1.2	<1.5	1.9 ± 0.7
81364	38979	2.0 - 3.0	Pad 4	<10.7	1.1 ± 0.1	1.5 ± 0.2	4.2 ± 1.1
81364	38947	0.0 - 0.5	Pad 4	<9.9	0.9 ± 0.1	1.4 ± 0.2	2.8 ± 0.9
81298	38979	1.0 - 2.0	Pad 4	<14.5	1.2 ± 0.2	1.6 ± 0.2	1.9 ± 0.7
81298	38947	0.0 - 0.5	Pad 4	<2.3	<1	<1.5	3.6 ± 1</

Oak Ridge, Tennessee, Warehouses Site Certification Data Summary Worksheet

Gamma Radiation Exposure Rates Measured in Exterior Areas	
Table 4-4 in PRAR (page 35)	
Measurement Location	Average Exposure Rate ($\mu\text{R/h}$) ^a
Parcel 1A^c	
Area 1	8.8
Area 2	8.8
Area 3	6.4
Area 4	8.8
Area 5	9.2
Parcels 1B through 9^d	
Area 1	6.6
Area 2	8.4
Area 3	8.1
Area 4	9.5
Area 5	9.1
Area 6	5.7
Area 7	10.9
Area 8	9.7
Area 9	9.4
Area 10	10.3
Area 11	9.3
Area 12	9.3
Area 13	7.6
Area 14	9.8
Area 15	9.2
Area 16	8.9
Area 17	7.2
Area 18	10.3
Area 19	8.7
Area 20	10
Area 21	9.5
Area 22	7.8
Area 23	7.4
Area 24	9
Area 25	9.1
Area 38	8.5
Area 40	9.2
Area 41	8.7
Area 42	7.8
Area 43	8.2
Area 44	10
Area 45	9.5
Area 46	8.4
Area 47	9.1
Area 48	10
Area 50	7.6
Area 51	7.3
Area 52	7.2
Area 53	7.9
Area 54	8.9
Area 55	9
Area 56	9
Area 58	8.5
Area 59	7.5
Area 60	7.7
Area 61	9.4
Area 62	9.6
Area 63	9.4
Area 64	8.9
Area 65	9.5
Area 66	8.5
Area 67	8.6
Area 68	8.6
Area 69	8.2
Area 70	7.8
Area 71	7.8
Area 72	7.3
Area 73	7.9
Area 74	8.1
Area 76	9.1
Area 77	9.6
Decon Pad	7.6
Pad 2	8.6
Pad 3	8.6
Pad 4	9.5
Pad 5	7.5

^aAverage background (9.1 $\mu\text{R/h}$) has not been subtracted from exposure rates.

^bThe DOE radiation protection standard is 11.4 $\mu\text{R/h}$ above background (as reported in the text on page 28 of the PRAR).

^cAreas are shown in Figure 3-1 (page 15 in PRAR).

^dAreas are shown in Figure 3-3 (page 19 in PRAR).

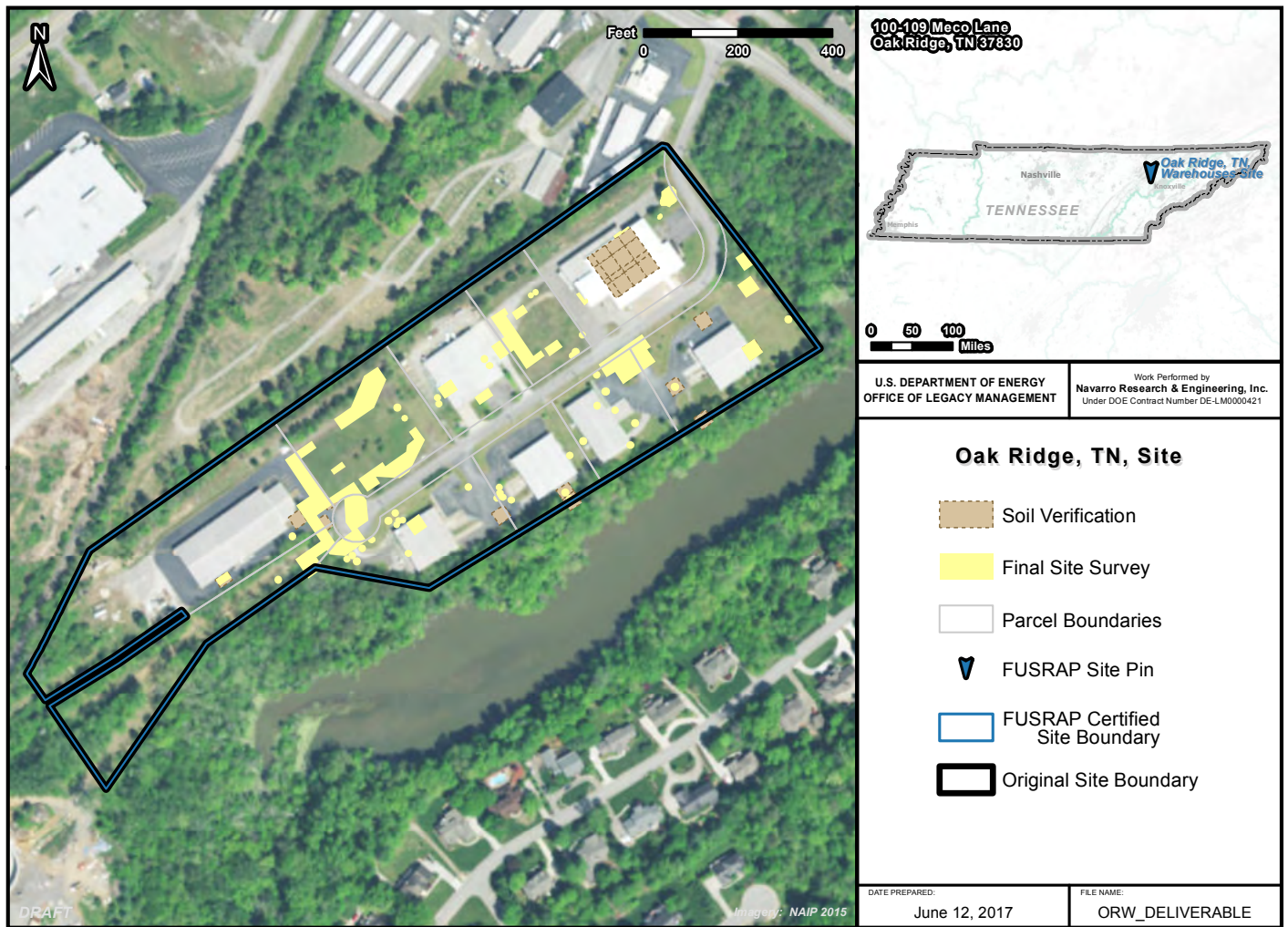
Gamma Radiation Exposure Rates Measured Inside the Building at Parcel 1A	
Table 4-6 in PRAR (page 39)	
Measurement Location ^a	Exposure Rate ($\mu\text{R/h}$) ^{b,c}
J	5.2
I	6.8
K	5.5
L	6.7
M	8.7
N	7.9
O	9.5
H	8.8
O	8.3
P	7.7
N	8.7
P	9.5

^aMeasurement locations are shown in Figure 3-2 (page 17 in PRAR).

^bThe DOE radiation protection standard is 11.4 $\mu\text{R/h}$ above background (as reported in the text on page 28 of the PRAR).

^cAverage background (9.1 $\mu\text{R/h}$) has not been subtracted from exposure rates.

Oak Ridge, Tennessee, Warehouses Site Map



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